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UNITED STATE PATENT AND TRADEMARK OFFICE

In re application	:	
Application No.	:	09/611,562
Filed	:	July 07,2000
For	:	HEAT EXCHANGER
Examiner	:	DUONG, THO V.
Art Unit	:	3743

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TRANSMITTAL OF ~~APPEAL~~ Reply BRIEF

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Sir:

Transmitted herewith is a Reply Brief in (7) pages, including (2) pages of Appendix A.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex Parte KOBAYASHI et al.

Application for Patent

Filed: 07/07/2000

Serial No.: 09/611,562

Group Art Unit 3743

Examiner DUONG, T. V.

For:

HEAT EXCHANGER

REPLY BRIEF

TABLE OF CONTENTS

1. INTRODUCTION

This Reply Brief is in response to the Examiner's Answer mailed Oct. 21, 2003. Under 37 C.F.R. §1.193(b), it is believed that the Examiner's Answer has raised new points of argument, and that this Reply Brief is therefore proper.

2. STATUS OF AMENDMENTS

The Examiner states in item (8) that that brackets are missing in "/" and "coil" or "coils", which have been crossed out. Appellants have amended claims 1-11 under 37 CFR 1.116 by adding brackets as required by the Examiner. The scope should be clear now after amendments.

3. THE EXAMINER'S ANSWER HAS RAISED NEW POINTS OF ARGUMENT

The Examiner's Answer raises new arguments in item (11) regarding prior art reference Kang et al..

3.1. The Examiner sustains the rejections.

In re Kang et al., the Examiner rejected claimed invention by the reasons basically based on the drawing Fig. 10a of Kang et al.. The Examiner also refers to

the Cases of **Mraz, 173 USPQ and Vas-Cath Inc. V. Mahurkar 19 USPQ 2d.** Specifically, the Examiner refers to Mraz to state that the drawing can anticipate the claim, wherein the measuring the ratio is taken. The Examiner also states that Park is referred only to supply the 7 mm diameter. Then, the Examiner made a conclusion that the rejections are sustained.

3.2. Appellant's Arguments

In re **Mraz**, it can be known that "**Drawings and pictures can anticipate claims if they clearly show the structure which is claimed. In re Mraz, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). However, the picture must show all the claimed structural features and how they are put together.**"

The present invention has provided a general rule to design the width slit and the spacing between the slits.

The present invention requires the conditions of:

(a) $Ws >= [1-0.1(6-N)] \times W_f / (2N+1)$ (with respect to claim 6);

(b) the width of each slit is within a range of about 0.17 to 0.29 times the diameter of one heat transfer tube (with respect to claim 8);

(c) the spacing between slits in each array is within a range of about 0.18 to 0.5 times the diameter of one heat transfer tube (with respect to claim 10).

When measuring the ratio or sizes of slit and pacing in Fig. 10a of Kang et al., it is found that at least one slit with the width and at least one of the spacing (the slit at the 5th row and the spacing between the 2nd slit row and the 3rd slit row, counted from the arrow direction A) do not satisfy the forgoing conditions. Kang et al. only discloses the condition with N=10. The detailed calculation and measurement are following.

(A) With respect to claim 6, Appellants measure the drawing on Fig. 10a, and have the Wf =33 mm. In this scale, the slit i.e. at the 5th row (counted from arrow A direction) has a width of about 2 mm (within line width error). According to Wf = 33 mm and N=10, the minimum Ws is 2.2 mm. Therefore, according to Fig. 10a, Kang et al. does not satisfy the condition (a) with respect to claim 6. Also and, Kang et al. failed to teach the parameter N other than 10. Kang et al. also failed to disclose that all slit widths, satisfying the required condition. In conclusions, Kang et al. does not

anticipate claimed invention as recited in claim 6 for the set of slits.

(B) With respect to claim 8, appellants also measure the diameter of the tube by 13 mm (with the same scale of Wf=33 mm). In this scale, the minimum Ws for the factor 0.17*13 mm = 2.21 mm. This is greater the 5th slit with 2 mm. Kang et al. by Fig. 10a do not anticipate the claimed invention recited in claim 8 for the set of slits.

(C) With respect to claim 10, Fig. 10a is also measured to have i.e. at least the spacing between 2nd slit row and the 3rd slit row by 2 mm. Again, the minimum spacing as recited in claim 10, applied on Kang et al. is 0. 18 * 13 mm = 2.34 mm. This is greater then 2 mm. Kang et al. by Fig. 10a do not anticipate the claimed invention recited in claim 10 for the set of slit spacing.

In other words, Kang et al. in Fig. 10a does not disclose all slit widths or all spacing satisfying the features recited in claimed invention.

In re Park, the tube with diameter of 7 mm is disclosed. However, as stated by the Office Action, Park is only referred to the diameter of 7 mm. Then, with the same foregoing reasons applied to the independent claims 6, 8, and 10, dependent claims 7, 9, and 11 are also distinguishable over Kang et al., in view of Park.

(D) Briefly, Kang et al. never disclose how to determine the slit width and the spacing between slits. ***Kang et al. also do not specifically state that the drawing is scaled from the actual size.*** Also and, Kang et al. is not a design patent to reflect the actual scale. Fig. 10a of Kang et al. ***does not show*** that all of the slit widths or all of the slit spacings are satisfying the condition as recited in claimed invention. Kang et al. only disclose the case with N=10 to design the slit array structure. It is believed that the slit width and the slit spacing are not considered by the Kang et al.. The drawing Fig. 10a is not scaled, therefore it does not reflect the actual size. Also and the drawing Fig. 10a does not completely satisfy the condition as recited in claims 6, 8, and 10. Therefore, the drawing Fig. 10a of Kang does not anticipate the claimed invention.

Park does not supply the missing features in Kang with respect to independent claims 6, 8, and 10, then with at least the same reasons, dependent claims 7, 9, and 11 are distinguishable over Kang et al. in view of Park.

It is also respectfully reminded that the hindsight with potentially improperly construing the disclosure of Kang et al. should be avoided.

4. CONCLUSION

The Appellant has stated that the drawing in Fig. 10a of the prior reference is not scaled from the actual size. Even if the size of drawing is used, the drawing also failed to anticipate the claimed invention at least recited in claims 6, 8 and 10. Therefore, the Board is requested to reverse the rejection of claims 6-11 under 35 U.S.C. 102 and 35 U.S.C. 103.

Respectfully submitted,
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APPENDIX A – AMENDMENTS FOR CLAIMS ON APPEAL

Claims 1-5 (Canceled)

6. (Currently Amended) A structure of heat transfer fin mounted within a heat exchanger that includes a plurality of heat transfer [[~~coils~~]] tubes penetrating through the heat transfer fin, wherein air is supplied orthogonally to said heat transfer [[~~coils~~]] tubes, and the heat transfer fin is partitioned in at least one fin unit in which arrays of slits are arranged in a row, the heat transfer fin being characterized in that the arrangement of the arrays of slits satisfies the following formula:

$Ws >= [1-0.1(6-N)] \times W_f / (2N+1)$,

wherein Ws = width of one slit, W_f = width of a fin unit, and N = the number of slits arrays [[~~/~~]] or the number of heat transfer fin units.

7. (Currently Amended) The heat exchanger of claim 6, wherein each heat transfer [[~~coil~~]] tube has a diameter of about 7mm.

8. (Currently Amended) A structure of heat transfer fin mounted within a heat exchanger that includes a plurality of heat transfer [[~~coils~~]] tubes penetrating through the heat transfer fin, wherein air is supplied orthogonally to said heat transfer [[~~coils~~]] tubes, and the heat transfer fin is partitioned in at least one fin unit in which arrays of slits are arranged in a row, the heat transfer fin being characterized in that the width of each slit is within a range of about 0.17 to 0.29 times the diameter of one heat transfer [[~~coil~~]] tube.

9. (Currently Amended) The heat exchanger of claim 8, wherein a diameter of one heat transfer [[~~coil~~]] tube is about 7mm.

10. (Currently Amended) A structure of heat transfer fin mounted within a heat exchanger that includes a plurality of heat transfer [[~~coils~~]] tubes penetrating through the heat transfer fin, wherein air is supplied orthogonally to said heat transfer [[~~coils~~]] tubes, and the heat transfer fin is partitioned in at least one fin unit in which arrays of slits are arranged in a row, the heat transfer fin being characterized in that the spacing between slits in each array is within a range of about 0.18 to 0.5 times the diameter of one heat transfer [[~~coil~~]] tube.

11. (Currently Amended) The heat exchanger of claim 10, wherein a diameter of one heat transfer [[~~coil~~]] tube is about 7mm.